CLAIMS

1. Process for desulfurization of a hydrocarbon-containing feedstock that comprises at least the following stages:

a) a selective hydrogenation of diolefins that are present in said initial hydrocarbon feedstock in the presence of a catalyst of group VIII of the periodic table, in the presence of an amount of hydrogen that slightly exceeds the stoichiometric value that is necessary for hydrogenating all of said diolefins,

b) an extraction by a suitable solvent of said hydrogenated fraction under conditions that make it possible to obtain at least two fractions:

- a raffinate that comprises for the most part olefins, paraffins and naphthenes and a reduced amount of sulfur-containing compounds that are contained in the initial feedstock,
- a fraction that contains the majority of aromatic hydrocarbons and the majority of the sulfur-containing compounds that are contained in the initial feedstock.

2. Process according to claim 1, in which the molar ratio between the hydrogen and the diolefins in stage a) is between 1 and 10.

3. Process according to one of the preceding claims, in which said catalyst comprises at least one metal that is selected from the group that consists of platinum, palladium, and nickel.

4. Process according to claim 3, in which said catalyst also comprises at least one metal of group VIB of the periodic table.

5. Process according to claim 4, in which the fraction that contains the majority of the sulfur-containing compounds is treated in a hydrodesulfurization unit.

6. Process according to one of the preceding claims, in which said selective hydrogenation is used under a pressure of about 0.4 to 5 MPa, at a temperature of between about 50 and 300°C, with an hourly volumetric flow rate of the feedstock of between about 1 h^{-1} and 12 h^{-1}.

7. Process according to one of the preceding claims, in which said extraction is selected from the group that consists of extractive distillations and liquid-liquid extractions.

8. Process according to one of the preceding claims, in which said solvent is a compound or a mixture of compounds selected from the group that consists of the following compounds: sulfolane, 3-methylsulfolane, 2,4-dimethylsulfolane, 3-methylsulfolane, 3-ethylsulfolane, N-methyl pyrrolidone, 2-pyrrolidone, N-ethyl-pyrrolidone, N-propyl-pyrrolidone, N-formyl-morpholine, dimethylsulfone, diethylsulfone, methylethylsulfone, dipropylsulfone, dibutylsulfone, tetraethylene glycol, triethylene glycol, dimethylene glycol, ethylene glycol, ethylene carbonate, and propylene carbonate.

9. Use of the process according to one of claims 1 to 8 for the treatment of gasolines that are obtained from fluidized-bed cracking (FCC), steam-cracking, coking, visbreaking or a mixing of gasolines obtained from these processes.

10. Use of the process according to one of claims 1 to 8 for the treatment of gasolines with a higher boiling point of less than 220°C.